Direct Couple Amplifier

PRODUCT DATASHEET RFDCA20

Features:

- RF Frequency: DC - 20 GHz
- Small signal gain: 14 dB
- Output P1dB: 5.8 dBm
- Saturated Output Power: 10.93 dBm
- DC drain bias voltage: 5 V
- DC supply current: 50 mA
- DC Gate Bias Voltage: -0.5 V
- 0.1um GaAs pHEMT Technology
- Die Size: 1.15 mm * 1.45 mm

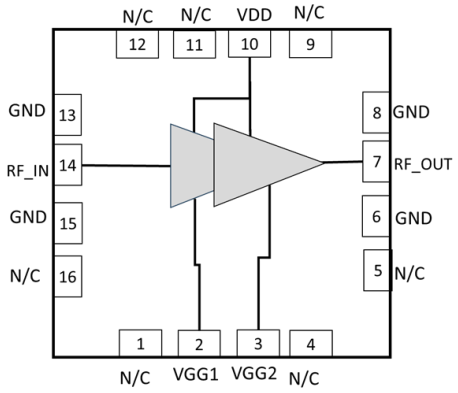
Applications:

- Broadband RF and microwave signal amplification
- Test and measurement systems
- Communication system front-ends
- Radar and electronic warfare (EW) systems
- Signal conditioning in high-frequency circuits

Deliverables:

- Sample Ready Die
- Product Datasheet

Functional Block Diagram:



Pin Configuration:

Pin No.	Pin Name	Description
1,4,5,9,11,12,16	N/C	Not Connected
6,8,13,15	GND	Ground
2	VGG1	Gate Bias Voltage 1
3	VGG2	Gate Bias Voltage 2
10	VDD	Drain Bias Voltage
14	RF-IN	RF Input
7	RF-OUT	RF Output

Description:

RFDCA20 is a broadband Direct Coupled Amplifier designed for operation from DC to 20 GHz. The amplifier provides good small-signal gain with input and output matched to 50 Ω.

The wideband frequency coverage makes the device suitable for a broad range of RF, microwave, instrumentation, communication, and SATCOM applications requiring moderate gain over an extended frequency range.

The amplifier is fabricated using a 0.1 µm GaAs pHEMT process. The results presented in this datasheet include all relevant parasitic and coupling effects at the specified frequencies.

Electrical Specification:

Freq= DC - 20GHz, VDD= 5V, VGG1=VGG2= -0.5 V, ID= 50 mA, Zo=50 Ω

Parameters	Test Condition	Units	Typ
Gain	DC	dB	9.2
	10 GHz		14
	20 GHz		10
Output P1 dB	DC	dBm	
	10 GHz		5.8
	20 GHz		
OIP3 Pin= 1 dBm Δf = 50MHz	DC	dBm	
	10 GHz		13.2
	20 GHz		
Input Return Loss	DC	dB	0.7
	10 GHz		3
	20 GHz		4.7
Output Return Loss	DC	dB	22.5
	10 GHz		13.5
	20 GHz		7
Operating Bias Conditions			
Drain Current (Id)	-	mA	50
Drain Voltage (VDD)	-	V	5
Gate Voltage (VGG)	-	V	-0.5

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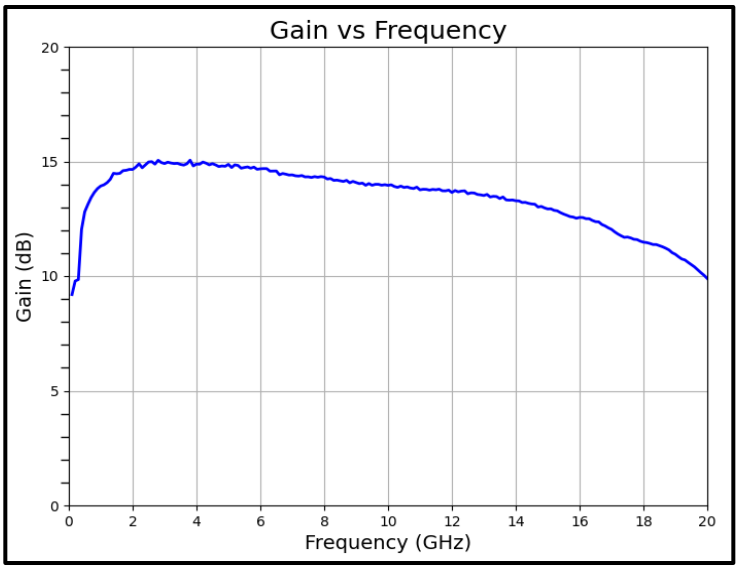
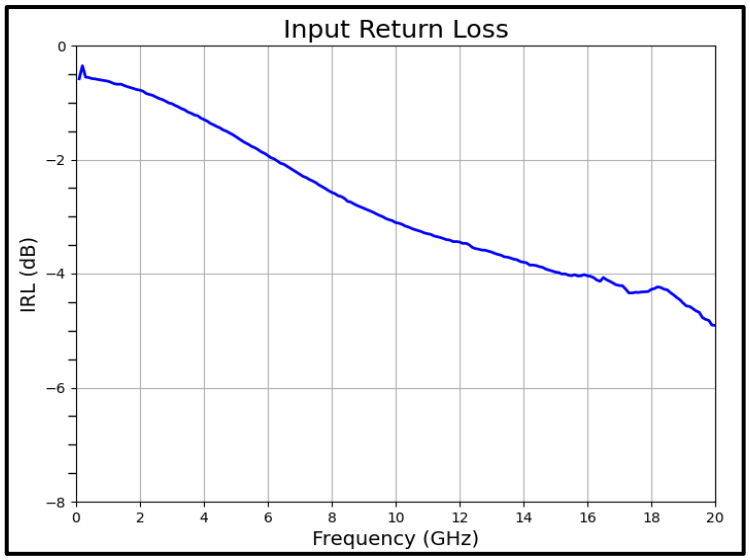
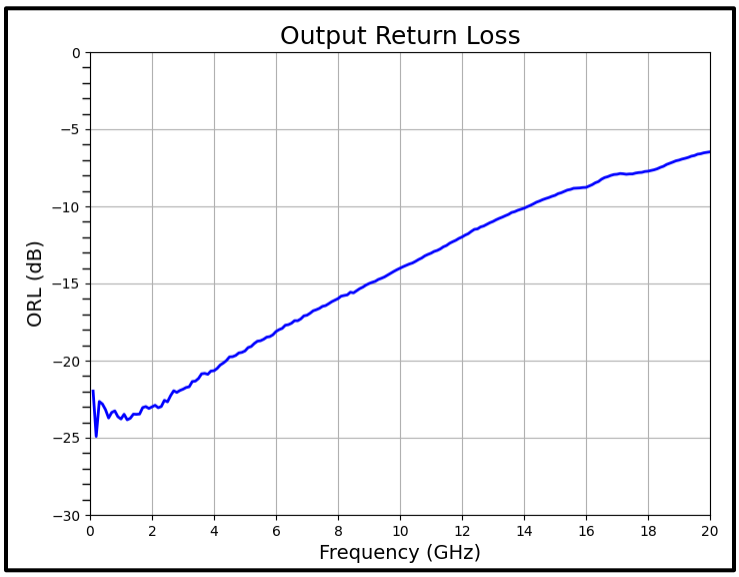
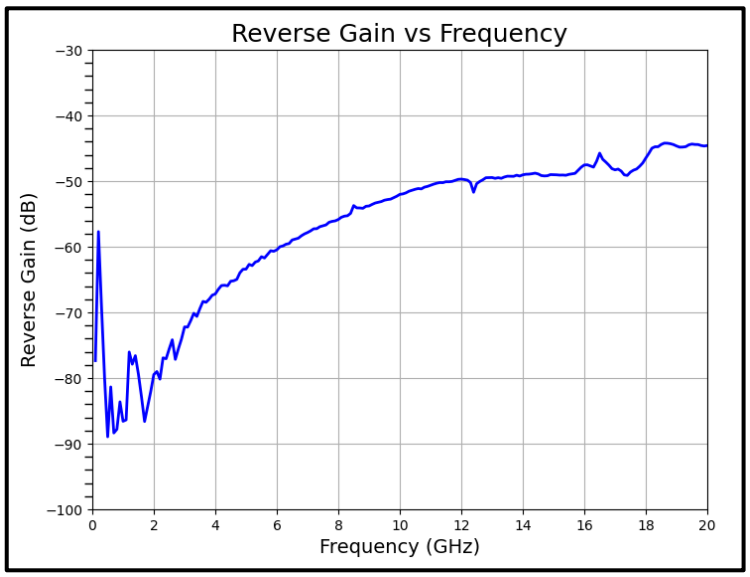
On- Wafer Measured Data Performance Curve:

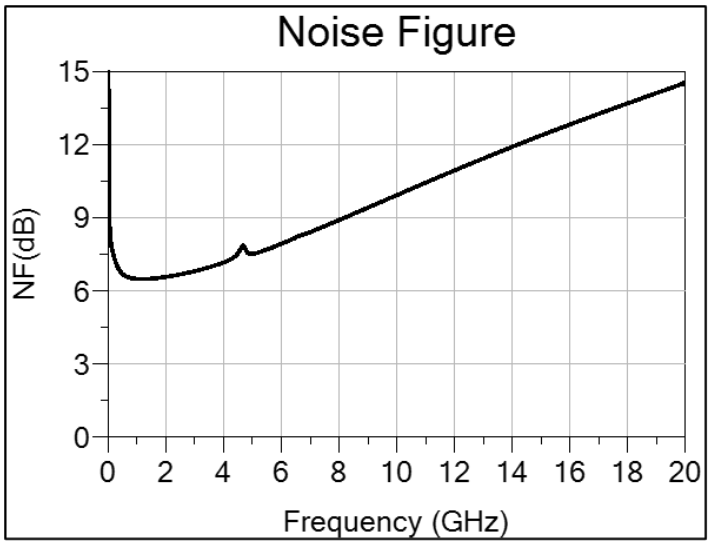


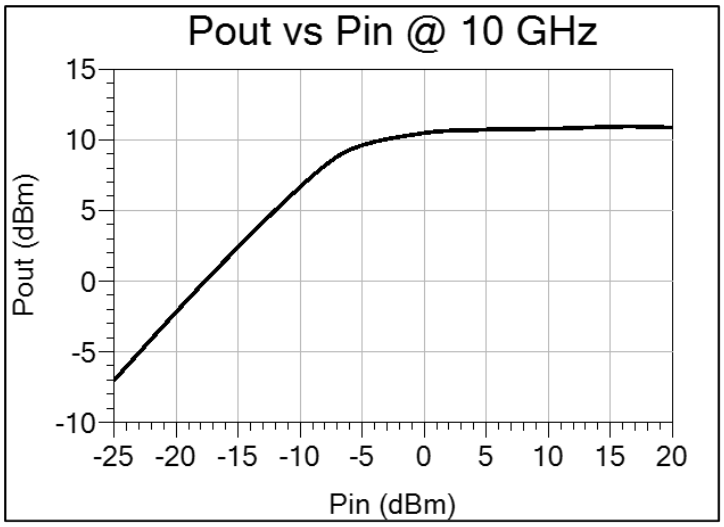


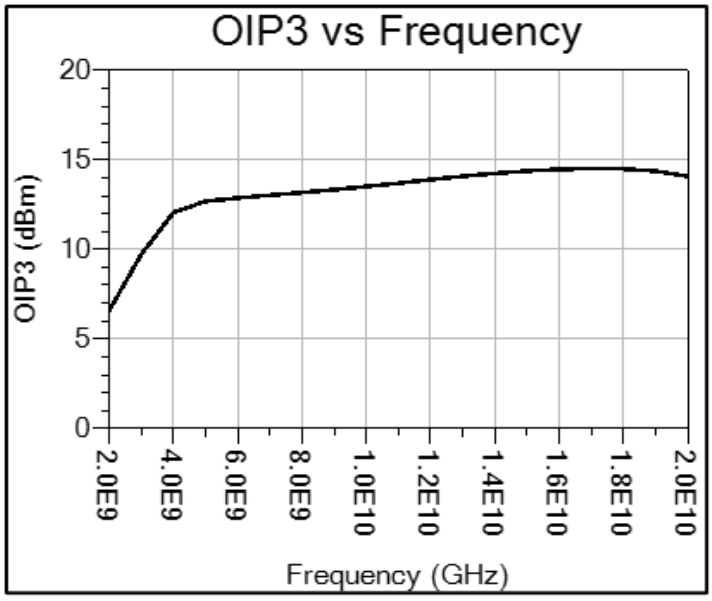




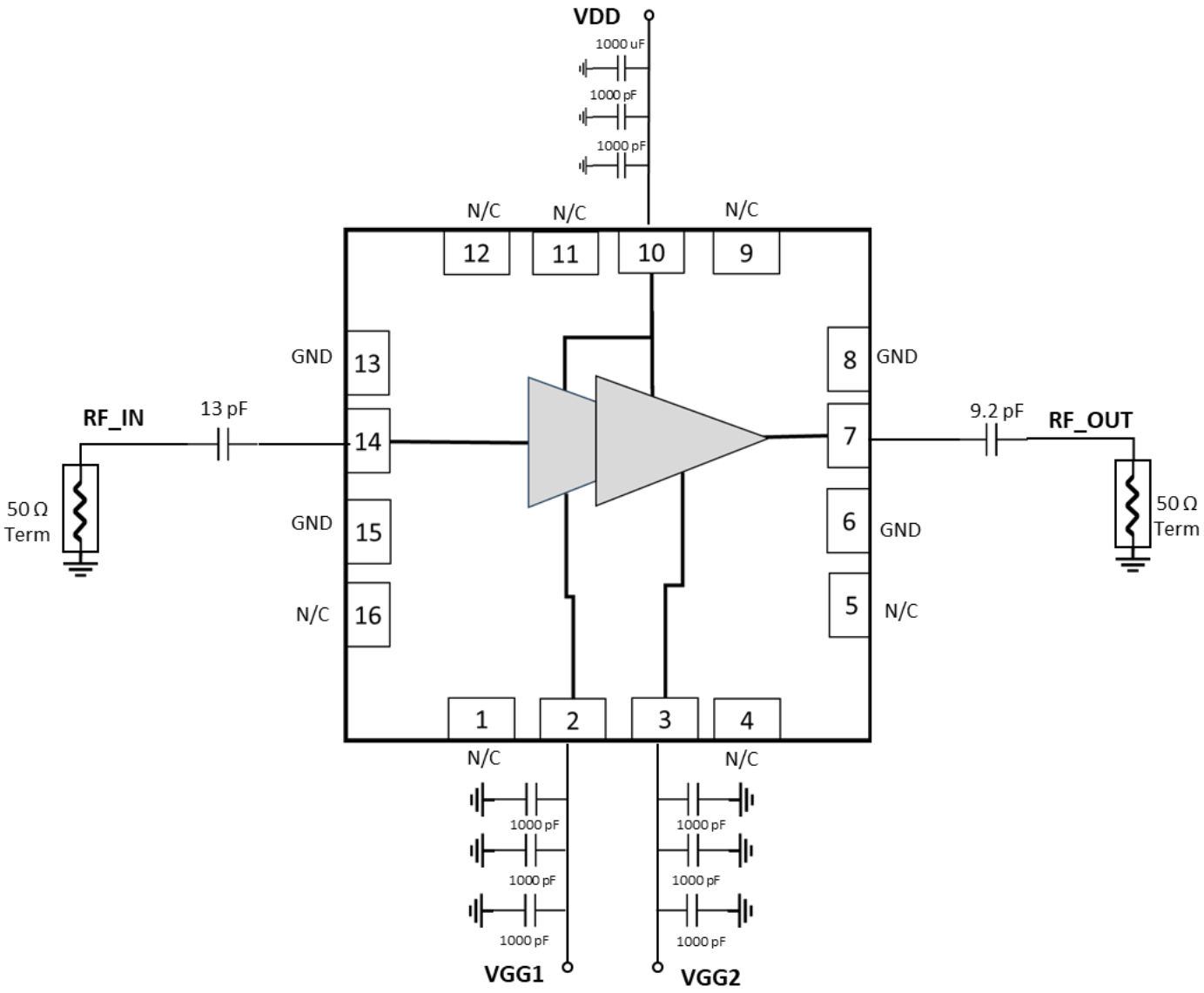
Typical Performance Curves:







Application Diagram:



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